Prepared by Barry A. Lindahl 300 Main Street Suite 330 Dubuque IA 52001 563 583-4113

ORDINANCE NO. 37-15

AMENDING THE CITY OF DUBUQUE CODE OF ORDINANCES BY DELETING SECTION 16-11-20: WATER SUPPLY AND ADOPTING THE FOLLOWING NEW SECTION 16-11-20: WATER; SECTION 16-11-20-1:DEFINITIONS; SECTION 16-11-20-2: WATER SUPPLY; SECTION 16-11-20-3: GEOTHERMAL WELL STANDARDS; AND SECTION 16-11-20-4: WATER WELL SUPPLY SYSTEM.

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF DUBUQUE, IOWA:

Section 1. City of Dubuque Code of Ordinances Section 16-11-20 is hereby amended to read as follows:

16-11-20: WATER:

16-11-20-1: DEFINITIONS:

ANNULAR SPACE: The space between the casing or well screen and the wall of the borehole or between drilling pipe and casing or between two separate strings of casing.

AQUIFER: A subsurface water-bearing layer of soil, sand, gravel or rock that will yield usable quantities of water to a well.

BOREHOLE: A hole drilled or bored into the earth, usually for exploratory or economic purposes; a hole into which casing, screen and other materials may be installed to construct a well.

CASING: An impervious, durable pipe placed in a borehole to prevent the walls of the borehole from caving, and to seal off surface drainage or undesirable water, gas or other fluids and prevent entrance into a well.

DRINKING WATER: Water which is intended for human consumption and other domestic uses, and is considered to be free of harmful chemicals and disease-causing microorganisms.

GEOTHERMAL BOREHOLE: A hole drilled or bored into the earth into which piping is inserted for use in a geothermal system.

GEOTHERMAL SYSTEM: A mechanism for heat transfer by fluid to air processes and heat transfer by fluid to fluid processes which consists of the following basic elements: Underground loops of piping; heat transfer fluid; a heat pump

1. Open Loop Geothermal System: Ground water is pumped from a water well into a heat exchanger located in a surface building and is then pumped back into the aquifer through a different well, the same well, or to the surface of the ground or to a surface body of water, also known as pump and dump.

2. Closed Vertical Loop or Horizontal Geothermal System: A borehole extends beneath the surface. Pipes are installed with U-bends at the bottom or at the end of the boreholes. The pipes are connected to the heat exchanger and heat transfer fluid is circulated through the pipes.

GROUND WATER: Water beneath the earth's surface, that occurs between saturated soil and rock that supplies wells and springs.

GROUT: A low permeability material that is emplaced in the space between the wall of the borehole and the casing of a well and, or, emplaced on the wall of the borehole. Grout shall consist of materials designed to adequately seal the annular space like neat cement, high solids bentonite slurry, or hydrated bentonite chips.

HEAT EXCHANGER: A device usually made of coils of pipe that transfers heat from one medium to another; for example, from water to air or water to water.

HEAT TRANSFER FLUID: Any liquid used specifically for the purpose of transferring thermal energy from the heat source to another location.

LOW PERMEABILITY MATERIAL: A geological unit of unconsolidated material (usually clay or till) or bedrock (usually shale) that is all or partially saturated, and having permeability low enough (10-7 cm/sec) to give water in the aquifer artesian head and/or provide protections to aquifers from activities taking place at the ground surface or within the geologic unit directly above the low permeability material.

MAJOR GEOTHERMAL SYSTEM: A horizontal or vertical closed loop system that is located more than 20 feet below the ground surface.

MINOR GEOTHERMAL SYSTEM: A horizontal closed loop system that is placed at or less than 20 feet below the ground surface.

PERMEABILITY: The propensity of a material to allow fluid to move through its pores or interstices.

SEPARATION/ISOLATION DISTANCES: The distance of a source of contamination from a surface drinking water source, a ground water source supply well, or any type of borehole that is identified and/or regulated by the Iowa Department of Natural Resources.

SURFACE WATER: Water located on the surface of the Earth in water bodies such as lakes, rivers, streams, ponds and reservoirs.

TREMIE: A tubing string (typically about 1 to 3 inches in diameter) that is temporarily installed into the borehole during well construction. The tremie pipe is used for installing annular material such as filter pack sand and grout.

WATER SUPPLY WELL: A well-used by public water systems, or non-public use, for extracting ground water for human consumption.

WELL: Any excavation that is drilled, cored, driven, dug, bored, augured, jetted, washed or is otherwise constructed for the purpose of exploring for ground water, monitoring ground water, utilizing the geothermal properties of the ground, or extracting water from or injecting water into the aquifer. "Well" does not include an open ditch, drain tiles, an excavation made for obtaining or prospecting for oil, drain tiles, natural gas, minerals, or products mined or quarried, lateral geothermal heat exchange systems nor temporary dewatering wells such as those used during the construction of subsurface facilities only for the duration of the construction.

16-11-20-2: WATER SUPPLY:

A. All water supply installations for major and minor subdivisions in the city limits shall be properly connected with an approved and functioning public water supply system.

B. If a public water supply system is to be provided to the area within a three (3) year period as indicated in the comprehensive plan, the city council may require installation of a capped system within the street or road right of way; or the city council may require a payment in lieu of the improvement.

C. All proposals for new public water supply systems or extensions to existing public water systems, or the use of wells and other water sources, shall be approved by the City Manager.

D. The water supply system shall be adequate to handle the necessary flow based on complete development of the subdivision and extensions of the system to areas beyond the subdivision. Water supply system design and placement shall comply with the city standards.

E. Fire hydrant size, type, location and installation shall comply with the minimum city standards.

16-11-20-3: GEOTHERMAL WELL STANDARDS:

A. PURPOSE: It is the purpose of this section is to protect the health, safety and general welfare of the people of the City of Dubuque by ensuring that ground water will not be polluted or contaminated. Because of the serious potential of adverse environmental impacts, this section is intended to prohibit all open loop geothermal systems. This section allows for closed loop systems subject to the requirements

contained in this section for the construction, reconstruction, repair and destruction of geothermal wells. The construction of geothermal wells must use construction standards designed to adequately protect the aquifers in each specific geologic setting encountered and in all other criteria, comply with 567 Iowa Administrative Code Chapter 49. All well services must be performed with an Iowa Department of Natural Resources certified well contractor as required by 567 Iowa Administrative Code Chapter 82. The certified well contractor must be on-site and in direct control of all well services being performed

B. PERMIT REQUIRED:

1. Prior to the construction of any well, the well contractor must obtain a private water well construction permit from the Dubuque County Health Department and a permit from the Building Services Department, and where applicable, an Iowa Department of Natural Resources permit as required by 567 Iowa Administrative Code Chapter 50-52 and Iowa Code Chapter 455B, Division III, Part 4.

2. No person may dig, bore, drill, replace, modify, repair or destroy a geothermal well or any other excavation that may intersect ground water without first applying for and receiving a permit from the Building Services Department.

C. APPLICATION PROCEDURE: Applications for permits required by this section must be made on forms provided by the Building Services Department and must contain all such information as required on the form. The application must be submitted by the property owner, the owner's representative, or the well contractor and accompanied by the required filing fee. Minor closed loop systems may be authorized by the Building Official in consultation with the Water Department Manager and City Engineer. An application for a major geothermal system must include an environmental impact analysis prepared by an engineer licensed in the State of Iowa. Geothermal permits will be reviewed by the City Engineer and Building Official who will then make a recommendation to the City Manager.

D. SITE PLAN REQUIREMENT: A site plan showing the generally proposed location, number of wells, location of loops, including description and MSDS sheets of the heat transfer fluid, must be submitted with the application. The plan must include the calculated anticipated volume of grout that will be required. The plan must identify the heat transfer fluid including MSDS sheets. Heat transfer fluids that are toxic as identified by the International Plumbing Code under essentially toxic transfer fluids will not be accepted, and fluids must comply with the 567 Iowa Administrative Code Section 49.29(5). Geothermal pipe loops must be of approved material for geothermal installation, must have a 50 year warranty against defect and workmanship, and must be installed with a tracer wire. A base map showing any known operating and/or non-operating mines is also required with the application. Base maps are available online by the City Engineering Department and/or by the Iowa Department of Natural Resources geologists. Construction of a geothermal heat pump system (GHEX) within close proximity of mine shafts and mine workings

has the potential of creating additional hazards to both the structural integrity of the GHEX system as well as increasing vulnerability to the shallow aquifer.

E. LOCATION OF GEOTHERMAL SYSTEMS: The site plan must show the property boundaries and easements of record and must detail where the system is located on the property. Location of all loops must be within the property boundaries of the building lot and not encroach on any recorded easements. Major systems may not be located within one thousand feet (1,000 feet) of a current city well or water source. Minor systems may not be located within two hundred (200) feet of a city deep (Jordan/Cambrian-Ordovician) well or within four hundred (400) feet of a city shallow (alluvial aquifer) well. No geothermal system is allowed to be constructed within a 500-foot radius of an identified leaking underground storage tank (LUST) site.

F. PERMIT FEE: A permit fee, established by the City Manager, must be submitted with any application required by this section.

G. PERMIT SUSPENSION AND REVOCATION. The City Manager may suspend or revoke any permit issued pursuant to this section whenever the City Manager finds that the permittee has violated any of the provisions of this section or has misrepresented any material fact in the application or any supporting documents, or where the well or its use may pose a risk to groundwater quality, human health or the environment or should the system fail any of its mandated testing requirements.

H. OPEN LOOP SYSTEMS PROHIBITED: Open loop systems are prohibited.

I. TESTING OF SYSTEM: Geothermal piping systems must be tested as required by the Building Services Manager prior to operation of the system and every three (3) years thereafter. All geothermal systems must be pressure checked by a certified contractor not less than every three (3) years from the certification system date. Results of the tests must be submitted to the Building Services Department.

J. ABANDONMENT OF GEOTHERMAL SYSTEMS: Abandonment of geothermal systems must be as required in 567 Iowa Administrative Code Section 49.28. The heat transfer fluid must be removed by a displacement with grout and the loop pipes properly capped or sealed by an approved method. The top of the borehole must also be uncovered and properly capped or sealed by an approved method.

K. REGULATION CONFLICT: In the event any of the provisions of this section conflict with any state or federal regulation, the state or federal regulation will control.

L. COMPLIANCE: All procedures and methods for construction of geothermal wells must comply with the 567 Iowa Administrative Code Chapters 82 and 49 for non-public water supply wells and all applicable regulations of the United States Environmental Protection Agency.

M. EXISTING SYSTEMS: Except for provisions in 16-11-20-3-B-2 regarding replacement, modification, repair or destruction, this section does not apply to systems in existence on the date of the adoption of this ordinance.

16-11-20-4: WATER WELL SUPPLY SYSTEM:

A. WELLS PROHIBITED: Except as provided in section 16-11-20-2-C and section 16-11-20-3-B, no person may construct a well within the corporate limits.

B. EXCEPTIONS:

1. The Building Services Department may issue a permit upon such conditions and limitations as appropriate for the construction of a well installed for the purpose of groundwater monitoring and/or gauging and/or environmental investigation (Investigative Well).

2. The City Manager may issue a Special Exception Permit for the construction of other types of wells if the City Manager determines in the City Manager's sole discretion that connection to the public water supply is not economically feasible. The City Manager is under no obligation to issue a special exception permit and the authority to grant a special exception permit includes the authority to place conditions on the installation, use, operation, and the abandonment of wells, as well as the authority to establish fees for the administration, oversight, and monitoring as the City Manager deems appropriate.

3. If an Investigative Well or Special Exception Permit is issued, all well services must be performed with an Iowa Department of Natural Resources certified well contractor as required by 567 Iowa Administrative Code Chapter 82. The certified well contractor must be on-site and in direct control of all well services being performed.

C. WELL PERMIT:

1. A Permit Application must be completed and where applicable, an Iowa Department of Natural Resources permit as required by 567 Iowa Administrative Code Chapter 50-52 and Iowa Code Chapter 45513, Division III Part 4, be submitted to the Building Services Department or City Manager, as appropriate. The Application must contain a copy of an approved County Private Well Construction Permit. No well may be located within the influence of an existing or proposed city-owned well site as determined by the City Manager, nor be constructed within a 500-foot radius of an identified leaking underground storage tank (LUST) site.

2. A permit fee, established by the City Manager, must be submitted with any application required by this section.

D. EXISTING WELLS: The section does not apply to a private well in existence on the date of the adoption of this ordinance. The repair and modification of an existing well is also allowed, however, the capacity of an existing well may not be expanded and may be repaired and/or modified only upon receiving a permit from the Building Services Department.

E. COMPLIANCE: All procedures and methods for the construction of a private well must comply with 567 Iowa Administrative Code Chapters 82 and 49 for water supplies, design, and operation and with all applicable regulations of the United States Environmental Protection Agency.

F. CONNECTION TO PUBLIC WATER SUPPLY PROHIBITED: Wells may not be connected directly or indirectly to the public water supply.

Section 2. This Ordinance shall take effect upon publication.

Passed, approved and adopted this 1st day of June, 2015.

Roy D. Buol, Mayor

Attest:

Kevin S. Firnstahl, City Clerk

01094972-1\10422-068